

Monthly Marine Biotoxin Report

June 2005

Technical Report No. 05-18

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of June 2005. Ranges of toxin concentrations are provided for the paralytic shellfish poisoning (PSP) toxins and for domoic acid (DA). Estimates are also provided for the distribution and relative abundance of *Alexandrium*, the dinoflagellate that produces PSP toxins, and *Pseudo-nitzschia*, the diatom that produces domoic acid. Summary information is also provided for any quarantine or health advisory that was in effect during the reporting period.

Please note the following conventions for the phytoplankton and shellfish biotoxin distribution maps: (i) All estimates for phytoplankton relative abundance are qualitative, based on sampling effort and percent composition; (ii) All toxin data are for mussel samples, unless otherwise noted; (iii) All samples are assayed for PSP toxins; DA analyses are performed as needed (i.e., on the basis of detected blooms of the diatoms that produce DA); (iv) Please refer to the appropriate figure key for an explanation of the symbols used on the maps.

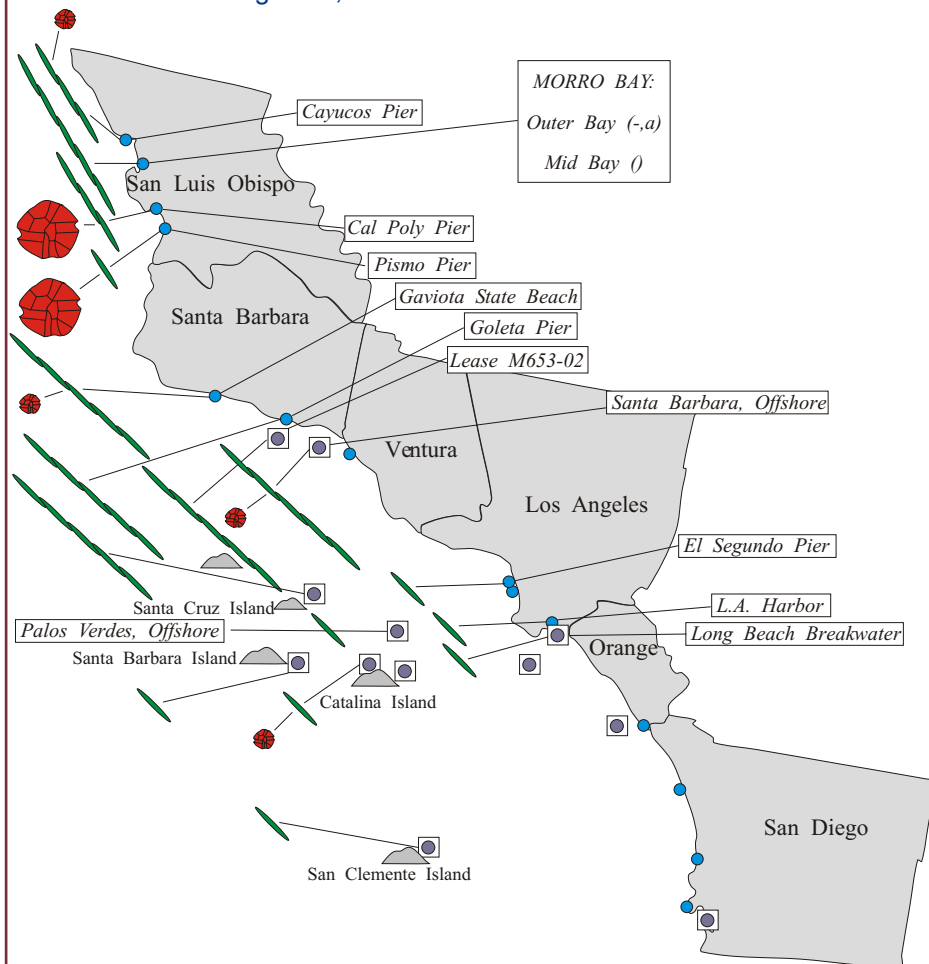
Southern California Summary:

Paralytic Shellfish Poisoning

Alexandrium was observed at several Southern California sites during June (Figure 1). The distribution of this toxin-producing

(Continued on Page 2)

Figure 1. Distribution of toxin-producing phytoplankton in Southern California during June, 2005.



Relative Abundance of Known Toxin Producers

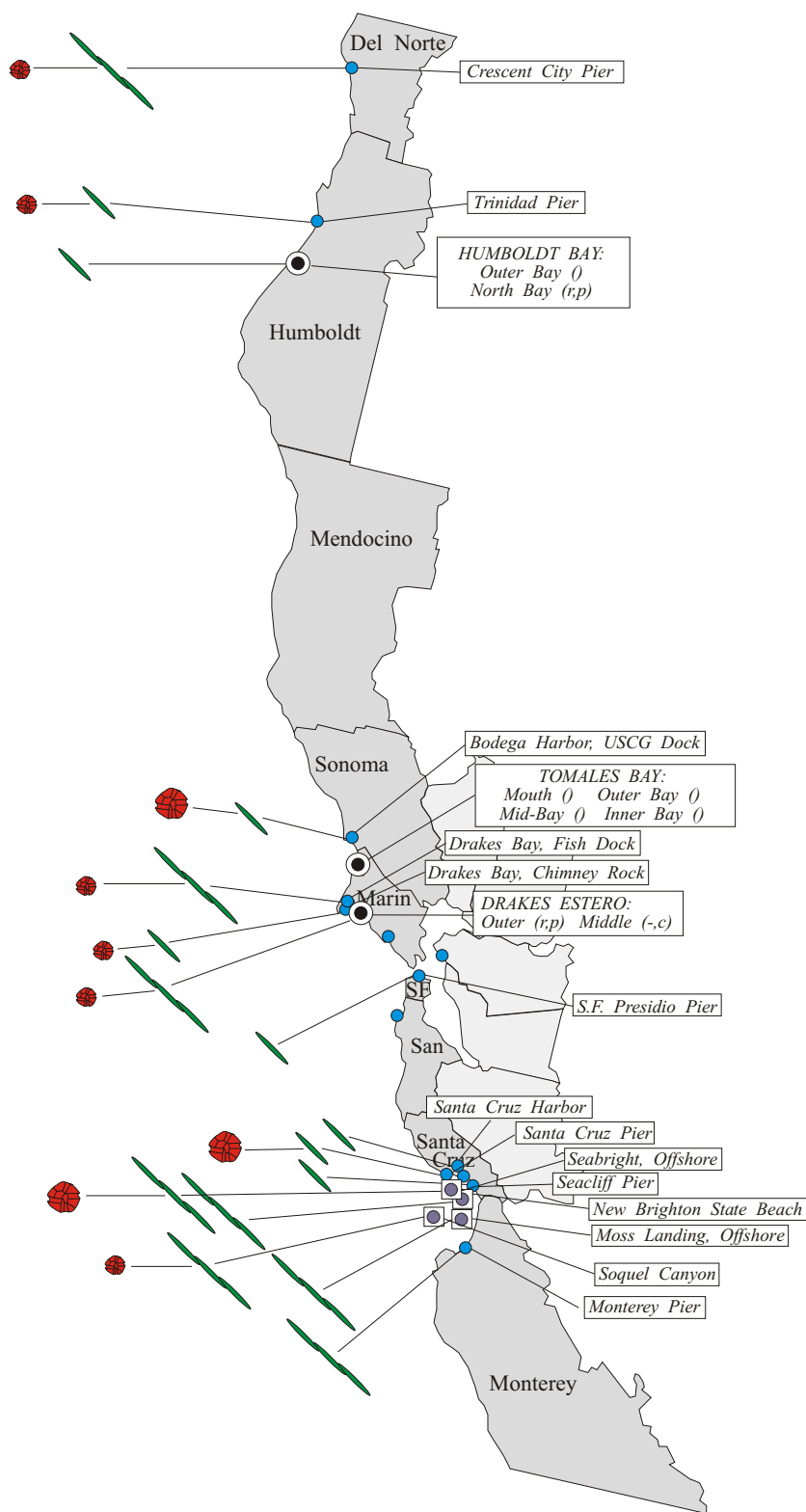
Alexandrium Species		Pseudo-nitzschia Species	
	Rare (less than 1%)		Present (less than 10%)
	Present (between 1% and 10%)		Common (between 10% and 50%)
	Common (between 10% and 50%)		Abundant (greater than 50%)
	Abundant (greater than 50%)		

MONTHLY SAMPLING STATIONS:

- Single Sampling Station
- Multiple Sampling Stations
- Offshore Sampling Station

For areas with multiple sampling stations, species abundance at each station is represented as follows:
(a,p) = Abundance for *Alexandrium* and *Pseudo-nitzschia*.
e.g., (c,p) = common, present; (a,-) = abundant, not observed

Figure 2. Distribution of toxin-producing phytoplankton in Northern California during June, 2005.



(Continued from Page 1)

dinoflagellate was similar to observations in May, however the relative abundance increased at sites in southern San Luis Obispo County (Avila, Pismo).

Low concentrations of PSP toxins were detected in mussels from Avila throughout the month (Figure 3). The low levels of these toxins detected in May at sites in Santa Barbara and Los Angeles declined below the detection limit by June.

Domoic Acid

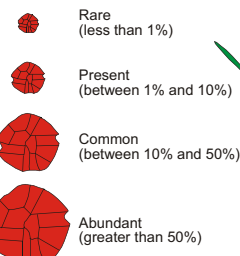
Pseudo-nitzschia was observed at sites along most Southern California counties in June (Figure 1). The relative abundance of this diatom increased significantly at sites along the coast of San Luis Obispo and Santa Barbara counties compared to observations in May. This diatom was also abundant offshore in samples from the Santa Barbara Channel and near Santa Cruz Island. *Pseudo-nitzschia* was also present in low numbers at sites along the Los Angeles coast and offshore near Catalina Island.

Domoic acid was detected in low to moderate levels in shellfish from San Luis Obispo through Ventura counties in June. The highest concentrations of domoic acid were found in mussels and oysters (15 ppm each) from an aquaculture lease just offshore of

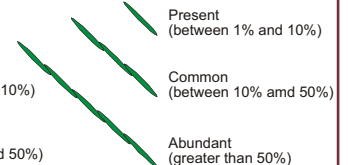
(Continued on Page 3)

Relative Abundance of Known Toxin Producers

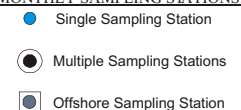
Alexandrium Species



Pseudo-nitzschia Species



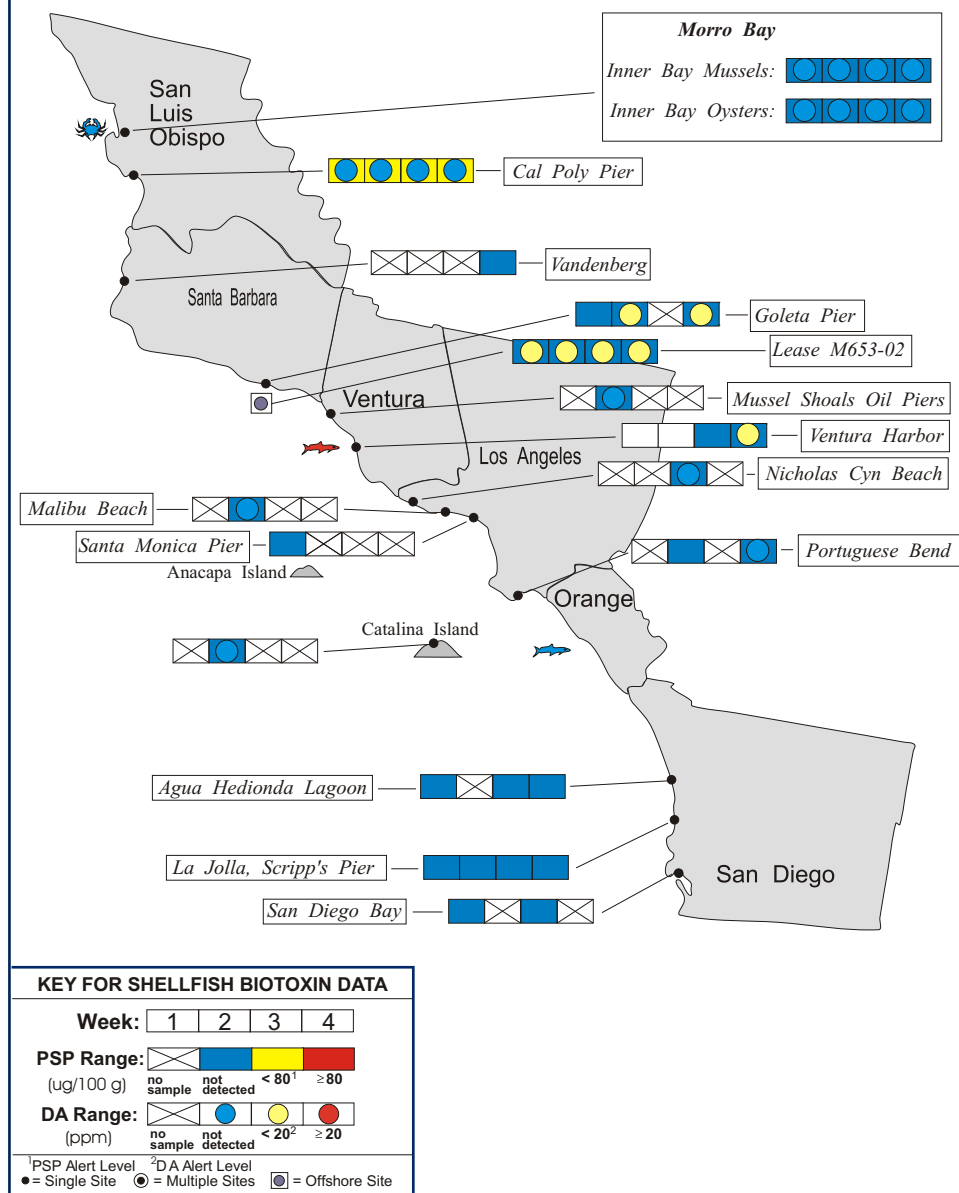
MONTHLY SAMPLING STATIONS:



For areas with multiple sampling stations, species abundance at each station is represented as follows:

(A,P) = Abundance for *Alexandrium* and *Pseudo-nitzschia*.
e.g., (c,p) = common, present; (a,-) = abundant, not observed

Figure 3. Distribution of shellfish biotoxins in Southern California during June, 2005.



(Continued from Page 2)

Arroyo Burro Beach (Santa Barbara County). Samples of anchovies caught offshore of Ventura County were obtained by the Department's Food and Drug Branch and found to contain extremely high concentrations of domoic acid (150 ppm). As a result of these high toxin levels a health advisory was issued as described in the section on quarantines below.

Non-toxic Species

A variety of diatoms (*Chaetoceros*, *Eucampia*, *Rhizosolenia*) dominated the assemblage along the coast from San Luis Obispo through Ventura counties. From Los Angeles through San Diego counties dinoflagellates were dominant. *Lingulodinium polyedrum* was abundant throughout this region. The dinoflagellate *Cochlodinium* was also abundant in samples from the Long Beach breakwater. *Gymnodinium*, *Prorocentrum*, and *Ceratium* were also common at a number of sampling sites.

Northern California Summary:

Paralytic Shellfish Poisoning

Alexandrium distribution in June remained similar to observations in May. Low to moderate numbers of this dinoflagellate were observed at sites along the coast of

The Marine Biotoxin Monitoring and Control Program, managed by the California Department of Health Services, is a state-wide effort involving a consortium of volunteer participants. The shellfish sampling and analysis element of this program is intended to provide an early warning of shellfish toxicity by routinely assessing coastal resources for the presence of paralytic shellfish poisoning (PSP) toxins and domoic acid.

The Phytoplankton Monitoring Program is a state-wide program designed to detect toxin producing species of phytoplankton in ocean water before they impact the public. The phytoplankton monitoring and observation effort can provide an advanced warning of a potential toxic bloom, allowing us to focus sampling efforts in the affected area before California's valuable shellfish resources or the public health is threatened.

For More Information Please Call:
(510) 412-4635

For Recorded Biotoxin Information Call:
(800) 553-4133

Del Norte, Sonoma, Marin, San Francisco, San Mateo, and Santa Cruz counties.

Low concentrations of PSP toxins were first detected at the Santa Cruz Pier during the first week of June. By the third week of the month low levels of these toxins were present in shellfish from Marin through Santa Cruz counties. PSP toxins increased above the alert level in sentinel mussels from Drakes Bay (132 ug) and Drakes Estero (155 ug) by the last week of June (Figure 4).

Domoic Acid

Pseudo-nitzschia was observed at most sampling stations along the Northern California coast in June (Figure 2). The relative abundance of this diatom increased at several sites inside Monterey Bay.

Low levels of domoic acid continued to be detected at sites in Del Norte and Humboldt counties. Mussels from Point St. George contained 6 ppm and razor clams from Clam Beach contained 5 ppm of domoic acid by late June.

Non-toxic Species

Diatoms remained the dominant group and included *Skeletonema*, *Chaetoceros*, and *Thalassiosira*. The dinoflagellate *Prorocentrum* was abundant inside Tomales Bay (Marin County) and at the Santa Cruz Pier by the end of the month.



QUARANTINES:

On June 24 the State Health Director issued a health advisory warning the public not to eat mussels or the viscera of sardines, anchovies, lobster (also known as lobster "tomale"), and crab (sometimes

(Continued on Page 5)

Figure 4. Distribution of shellfish biotoxins in Northern California during June, 2005.

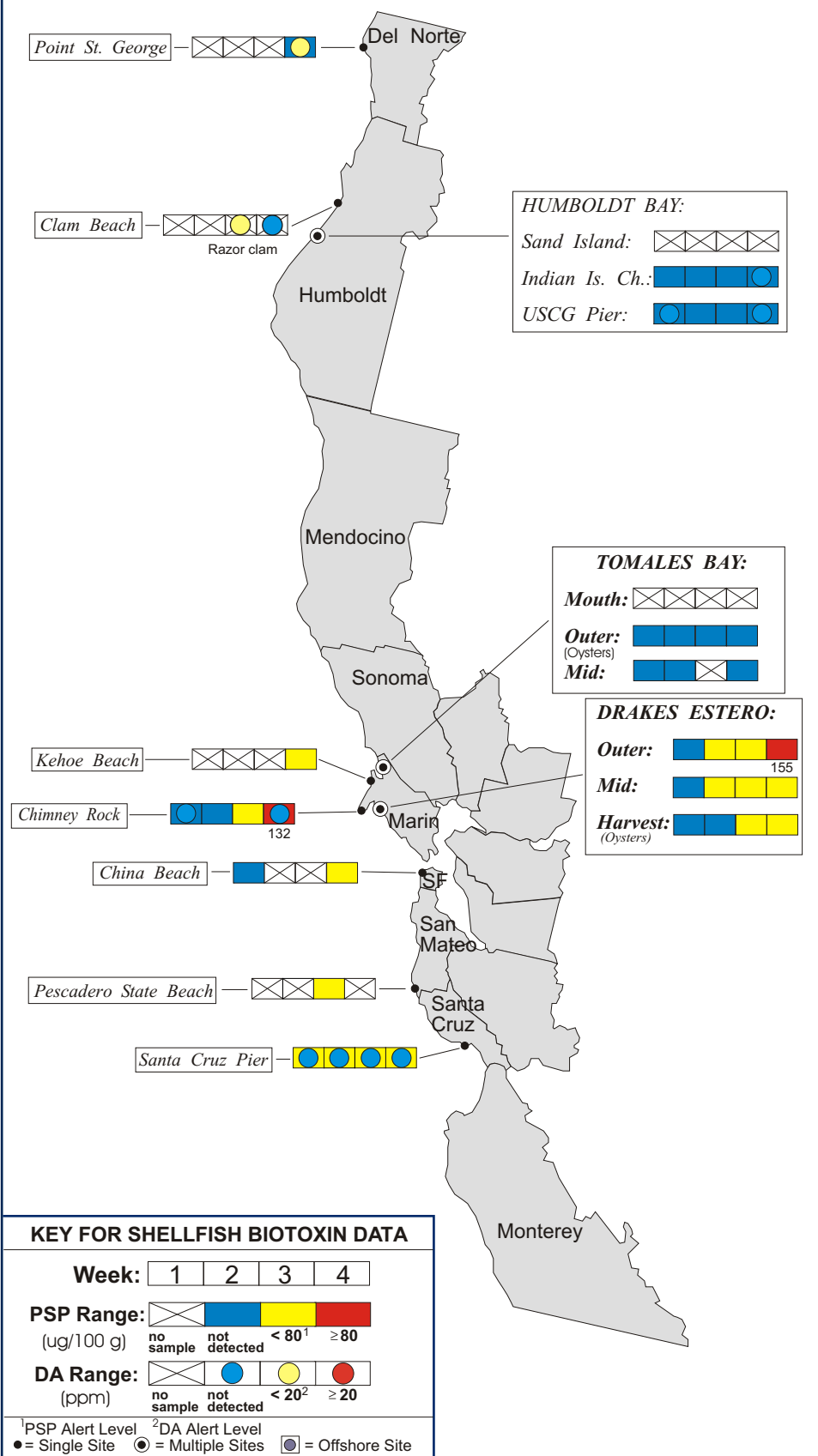


Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during June, 2005.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	1
Humboldt	Coast Seafood Company	8
	DHS Volunteer (Robert King)	2
Mendocino	None Submitted	
Sonoma	None Submitted	
Marin	Cove Mussel Company	4
	Hog Island Oyster Company	4
	Johnson Oyster Company	20
	Marin Oyster Company	3
	DHS Marine Biotoxin Monitoring Program	5
San Francisco	San Francisco County Health Department	2
San Mateo	San Mateo County Environmental Health Department	1
Santa Cruz	U.C. Santa Cruz	5
Monterey	None Submitted	
San Luis Obispo	Williams Shellfish Company	10
	Cal Poly	4
Santa Barbara	Santa Barbara Mariculture Company	20
	U.C. Santa Barbara Marine Science Institute	4
Ventura	Ventura County Environmental Health Department	1
	DHS Volunteer (Bill Weinert)	1
Los Angeles	Aquarium of the Pacific Long Beach	1
	Los Angeles County Health Department	6
Orange	None Submitted	
San Diego	Carlsbad Aquafarms, Inc.	3
	U.S. Navy	2
	Scripps Institute of Oceanography	5

(Continued from Page 4)

called crab "butter") from Ventura County. This advisory was issued after dangerous levels of domoic acid were detected in anchovies from this region, which increased the likelihood of this toxin being present in the other seafood items listed.

The annual quarantine on the sport-harvesting of mussels went into effect on May 1 and will continue through October 31. The annual mussel quarantine applies only to sport-harvested mussels along the entire California coastline, including all bays and estuaries. Routine biotoxin monitoring is maintained throughout this period. The annual quarantine does not affect the certified commercial shellfish growing areas in California.

Consumers of Washington clams, also known as butter clams, are cautioned to eat only the white meat. Washington clams can concentrate the PSP toxins in the viscera and in the dark parts of the siphon and can remain toxic for a long period of time. Persons taking scallops or clams, with the exception of razor clams, are advised to remove and discard the dark parts (i.e., the digestive organs or viscera). Razor clams are an exception to this general guidance due to their ability to concentrate and retain domoic acid in the edible white meat.

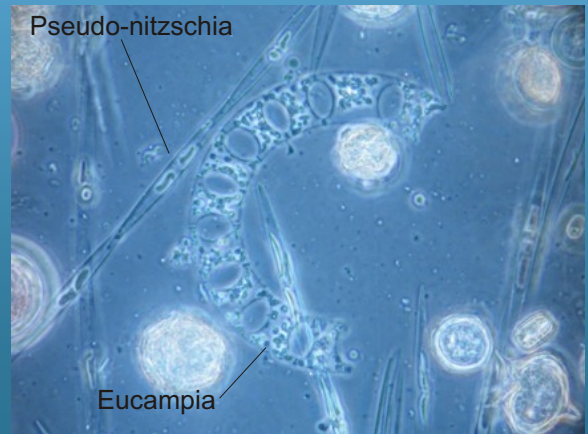
Consumers are also advised that cooking does not eliminate the toxins from the shellfish tissue. Sport-harvesters are encouraged to contact the "Biotoxin Information Line" at 1-800-553-4133 for a current update on marine biotoxin activity prior to gathering and consuming shellfish.



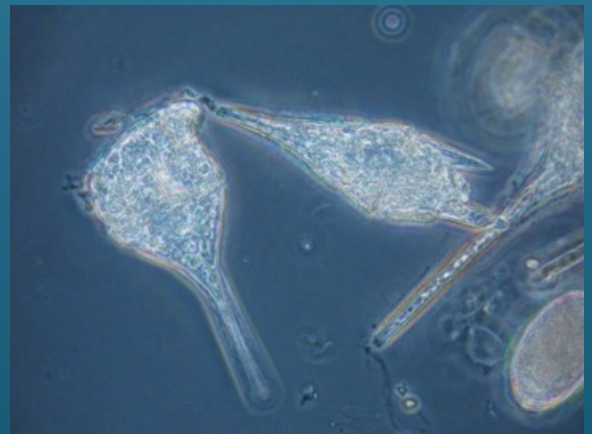
Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during June, 2005.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	4
Humboldt	Coast Seafood Company	4
	DHS Volunteer (Jacki Riley)	4
Mendocino	None Submitted	
Sonoma	DHS Volunteer (Cathleen Cannon)	2
Marin	DHS Volunteers (Brent Anderson, Mary Von Tolksdorf, Marjorie Siegel, Richard Plant)	9
	DHS Marine Biotoxin Monitoring Program	4
	Johnson Oyster Company	9
Contra Costa	DHS Marine Biotoxin Monitoring Program	1
San Francisco	DHS Volunteer (Eugenia McNaughton)	2
San Mateo	San Mateo County Environmental Health Department	1
Santa Cruz	U.C. Santa Cruz	5
	California Department of Parks and Recreation	4
Monterey	DHS Volunteer (Jerry Norton)	1
	Pacific Cetacean Group	2
San Luis Obispo	DHS Volunteers (Renee and Auburn Atkins)	3
	Morro Bay National Estuary Program	5
	Cal Poly	6
Santa Barbara	U.C. Santa Barbara	7
	Santa Barbara Mariculture Company	10
	California Department of Parks and Recreation	3
	Santa Barbara Channel Keeper	2
Ventura	Ventura County Environmental Health Department	1
	Catalina Tall Ships Expeditions	2
Los Angeles	Aquarium of the Pacific Long Beach	1
	Los Angeles County Sanitation District	3
	Catalina Tall Ships Expeditions	2
	City of Los Angeles Environmental Monitoring Division	3
	DHS Volunteer (Richard Weaver)	2
	Los Angeles County Sanitation District	7
	University of Southern California	3
Orange	Ocean Institute	1
	Scripps Institute of Oceanography	1
San Diego	Scripps Institute of Oceanography	6
	DHS Volunteer (Paul Sims)	6
	Catalina Tall Ships Expeditions	3

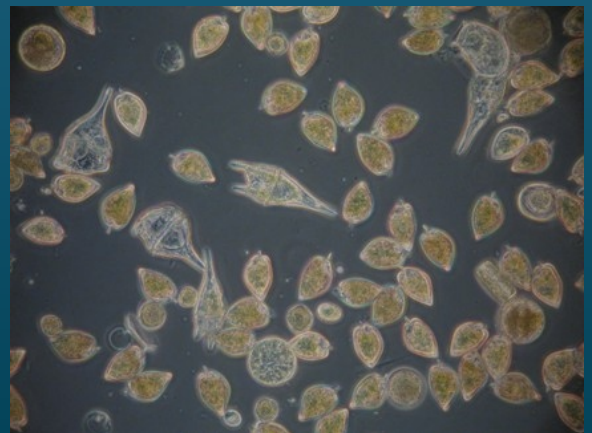
PHYTOPLANKTON GALLERY



Diatoms, including Eucampia and Pseudo-nitzschia, were common along the northern and central coast.



Several species of the dinoflagellate Ceratium were common along the Central and Southern California coast.



The dinoflagellate Prorocentrum was abundant offshore of the Palos Verdes peninsula in Los Angeles County.